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PROCEEDINGS OF THE FIRST SUDAN ALL-WOMEN'S ENVIRONMENTAL ASSESSMENT AND MANAGEMENT TRAINING HELD IN YEI FROM 18-22 OCTOBER 2004



October 2004

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COVER PHOTO

Community water point in Yei, Southern Sudan. Pools beside the water tank are teeming with oligochaete worms. Cover photo by Walter Knausenberger.

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ACRONYMS

AIDs	Acquired Immune Deficiency Syndrome
CWEC	Christian Women Empowerment Center
EA	Environmental Assessment
EIA	Environmental Impact Assessment
ENCAP	Environmental Capacity Building Project
ERF	Environmental Review Form
HIV	Human Immuno-deficiency Virus
IDP	Internally Displaced Persons
IEE	Initial Environmental Examination
NGO	Non Governmental Organization
PEA	Programmatic Environmental Assessment
PERSUAP	Pesticide Evaluation and Safer Use Action Plan
REDSO/ESA	Regional Economic Development Services Office for East and Southern Africa
SEA	Strategic Environmental Assessment
SFO	Sudan Field Office
USAID	United States Agency for International Development

PREFACE

USAID's Sudan Field Office (SFO) has been sponsoring "pilot" environmental assessment training among its implementing partners, Southern Sudanese public sector and NGO managers, and USAID's own staff in order to encourage an improvement in environmental management and monitoring capacity. To date, two rounds of training have been delivered in Southern Sudan, all in Yei, Equatoria, at the Women's Empowerment Center: 29 Mar.-3 April, 2004; and the present one, 18-22 October 2004. Additional training is planned. For the workshops, we adapted the curriculum developed by ENCAP using core resources of the Africa Bureau ENCAP Program funded by USAID/REDSO and Africa Bureau Office of Sustainable Development (AFR/SD). See <http://www.encapafrika.org.htm>. The training has been delivered by environmental compliance experts from REDSO/ESA's Environmental Compliance and Quality Support (ECQS) team, using a variety of instruments, including USAID/SFO's logistics contract and REDSO/ESA's core support to ENCAP. Participants spoke of the analytical skills they gained and of the need to establish environmental policies and regulations in post-war Southern Sudan, and to ensure that the roles of different institutions are clarified, such as the role of the Southern regional government as differing from local or county government. The SFO is funding a number of "bridging" activities to continue to build the base for strong engagement of environmental management in the development of Southern Sudan.

The trainers for this workshop were:

- Jane Kahata, Environment and Natural Resources Management Consultant
- David Kinyua, Assistant Regional Environmental and Pastoralism Advisor, USAID/REDSO
- Ephantus Wahome, Assistant Regional Environmental Policy Advisor, USAID/REDSO
- Fiesta Warinwa, Environmental Consultant

**-Walter I. Knausenberger, Senior Regional Environmental Officer,
USAID/REDSO, Nairobi, Kenya**

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ARRIVAL AND REGISTRATION OF PARTICIPANTS

Participants started arriving on Saturday the 16th of October. Registration was done on arrival. However, there were a few late arrivals due to logistical problems getting to the training venue. (More details on logistical issues are found in Annex 1.)

OPENING STATEMENTS

WELCOMING OF THE PARTICIPANTS TO THE TRAINING WORKSHOP

By West Yugulle, Sudan Field Office Program Management Specialist

Mr. Yugulle gave a brief welcoming speech to the participants and explained that this workshop was a follow up to one held this year from the 29th March to the 2nd April, in which only male participants attended. The Sudan Field Office found it necessary to reach out to the women of Southern Sudan, thus the organization of the Sudan All Women's Environmental Training Course.

BRIEF REMARKS ON THE ENCAP TRAINING

By Mr. Ephantus Wahome, REDSO/ESA Regional Environmental Advisor

Mr. Wahome gave a brief introductory speech on the history and purpose of ENCAP training courses and then invited the REDSO/ESA Food Security Office Director, Dr. Diana B. Putman to address the participants.

BRIEF REMARKS

By Dr. Diana B. Putman, Food Security, Office Director

Dr. Putman emphasized the important role that women have played in development generally and the environment in particular in other parts of the world, noting that there was a big role for the participants to play in the development and reconstruction of Southern Sudan. She encouraged them to actively participate, not just in the training, but also in the redevelopment of their country.

INTRODUCTIONS, PRESENTATION OF COURSE AGENDA AND SOLICITATION OF GROUP EXPECTATIONS

By Jane Kahata & David Kinyua

The participants were paired and asked to collect some details of their partners such as name; region/area where they were based; organizations they worked for and what the organization did; position/designation held in the organization; and what their expectations were from the workshop. Each participant then introduced the other partner. Workshop expectations were noted on flip charts as they were stated.

The following were elicited as the participant's expectations of the workshop:

- Learn about environmental issues;
- Learn how to use environmental resources prudently;
- Learn how to care for the environment;
- Learn more about the Environmental Impact Assessment process and methodology;
- Acquire more knowledge in small scale activities and the environment;
- Acquire outreach skills that would enable one to reach out to others on how to protect the environment;
- Enhance knowledge on the environment;
- Be able to build others' capacity in environmental management;

- Learn more about how to implement successful environmental programs;
- Gain knowledge about environmental issues and how they affect women and disseminate the same to others;
- See how one can be able to provide environmental booklets;
- Share and learn from others.

After the introductions, the participants were taken through the goals and objectives of the workshop and encouraged to participate actively throughout the whole week, seeking clarifications where necessary.

MODULE 2A: WHAT IS THE ENVIRONMENT?¹

This is a unique session that was introduced during the planning stages to ensure that participants without any background and experience in environment would feel comfortable. The session was also aimed at giving the participants an opportunity to explore and understand fully the meaning of the word “environment” in its broadest sense.

Each participant was asked to write down on a card her concept/understanding/meaning of the word environment. They were also to write down five or more “things” that they considered as part of the environment.

The cards were then collected and the participants’ definitions were read out and noted on flip charts. The following is the list generated by the participants on the definition and things they considered as part of the environment.

Atmosphere	Home
Forests	Life-forms: man and animals
Housing	Space surrounding us
Water	Vegetation
Land	Natural and man-made resources
Soils	Culture
Trees	Living and non-living things
Wildlife	Phenomenon
Mountains	Air
Grass	Surroundings
Rivers	Minerals and Creation

From the above list that was generated by the participants, it can be deduced that they had a fairly good understanding of the meaning of the word environment. Key things that were, however, not included in their definition were some aspects of the biological environment such as:

- Biodiversity
- Ecosystems
- Interactions between and among living things

Almost all the participants did not include the social, cultural, political and economic aspects of the environment in the definition and things they considered as part of the environment.

The facilitator then wrapped up the session by adding other environmental components that had not have been identified by the participants.

¹ See also “Annex 1: Briefing Notes and Additional Information” on p. 35.

This innovative addition to the typical ENCAP course was highly useful to the participants both in content and style of delivery. It also did achieve its objective as it opened and broadened the definition of the word “environment,” thereby enabling participants to follow through in subsequent sessions where the word environment was being used. The session also served as an icebreaker assisting the participants to open up early during the training.

DEFINITION OF TERMS

Definitions to be frequently used during the training were explained.

NB: This should ideally have come at the beginning of the course, but covering it before would have affected the module 2a in that the participants would have picked up some issues from it.

Environment broadly includes three related components, namely:

- The **Physical Environment**, which includes soil, land, water resources, air, etc.
- The **Biological Environment**: fauna (animals) flora (plants) Biodiversity, ecosystems, etc.
- **Social Environment** that includes culture, religion, local values, etc.

Biodiversity: The variety of life forms, the different plants, animals and microorganisms, the genes they contain and the ecosystems they form. Biodiversity is usually considered at three levels: genetic diversity, species diversity and ecosystem diversity.

Ecosystems: A dynamic complex of plants, animals, fungal and microorganism communities and the associated non-living environment that acts as an ecological unit.

Environmental Impact Assessment (EIA): EIA is a formal process for identifying the likely effects of particular activities or projects on the environment and on human health and welfare. It also includes the development of mitigation and monitoring measures to prevent or minimize the occurrence of adverse impacts.

Impact: An impact is a deviation from a baseline situation, or the likely future conditions in the absence of the proposed activity. It is important to recognize that the baseline situation is not static, but changes with time.

Baseline Conditions: This is the prevailing environmental situation without the project.

Cumulative Effects: Cumulative effects occur when the impacts of one project combine with the impacts of other past, present, or planned projects. The impacts of one project may be judged insignificant but when combined with many other little impacts from other projects may become significant.

Mitigation: These are specific actions taken to avoid, minimize or compensate for negative environmental impacts.

Assessment: The process of identifying impacts that are likely to occur from an activity or project, quantifying them, and judging their significance.

MODULE 2B: WHY ASSESS ENVIRONMENTAL IMPACTS?

The objective of the module was to give a historical perspective on the evolution of the EIA process in the world, as well as highlight some of the potential environmental disasters that can occur if we do not take care of the environment. EIA was also introduced as a tool for achieving sustainable development.

HIGHLIGHTS FROM MODULE 2B WERE:

- Environmental crisis that have occurred in the wealthy developed countries.

- Factors that precipitated the crisis.
- Evolution of the EIA process in the USA.
- Why developing countries should care about EIA.

MODULE 2C: CONSTRUCTING A HISTORICAL TIMELINE FOR SOUTHERN SUDAN²

Facilitated By: Jane Kahata

This presentation was introduced to complement the global overview on the motivation of environmental assessment. The participants reviewed the status of the environment in Southern Sudan since the country's independence in 1956 through the construction of a historical timeline.

Through this exercise, participants were able to analyze important events, trends, problems, and achievements that have taken place over time in Southern Sudan.

The following were given as the objectives of constructing a historical timeline:

- To give a perspective on major events that have occurred in Southern Sudan over time;
- To help the participants understand environmental changes that have occurred in Southern Sudan over time, including the contributing factors;
- To give insight into the patterns of resource use and management in Southern Sudan;
- To help participants identify some local examples of positive and negative impacts of development projects and programs; and
- To kindle participant interest in the need to conduct Environmental Impact Assessments/Reviews of development projects and programs.

To be able to do this, the participants were divided into two groups. One group was to analyze events that occurred between 1956-1980, while the second group analyzed events from 1980-2004.

ISSUES ARISING FROM THE HISTORICAL TIMELINE

- There have been conflicts on resource use in parts of Sudan, for example in the Mudri area over grazing land.
- While the war had, to some extent, ensured environmental conservation since most of the land had been left fallow, it had negative impacts in some areas such as in the case of the Kagulu forest, which was one of the field study sites. Management of the forest collapsed with the war and there was extensive, uncontrolled logging of the teak forest plantation. The forest is now being rehabilitated so that it can continue producing high value timber for the country and for the export market.
- Commencement of the construction of Jonglei canal in the late 1970s led to many negative impacts (social, political, economic and environmental). Some of these impacts were:
 - Massive displacement of people;
 - Impediment to the movement of wildlife, especially the kob that migrate seasonally from Ethiopia to Sudan, with many of them falling into the canal;

² See also "Annex 1: Briefing Notes and Additional Information" on p.35.

- Reduction in swamp (wetland) area that led to a decline in the fisheries industry;
- Deforestation; and
- Biodiversity loss.

Construction work stopped when the SPLA bombed the machinery being used to dredge it, and the project is not yet completed.

Participants noted that the Government of Southern Sudan might revive projects such as the Jonglei canal that stalled many years ago. The canal construction project should be evaluated for its potential adverse impacts on the environment before a decision is made on whether to continue with it or not, since issues that were of concern then are still valid today.

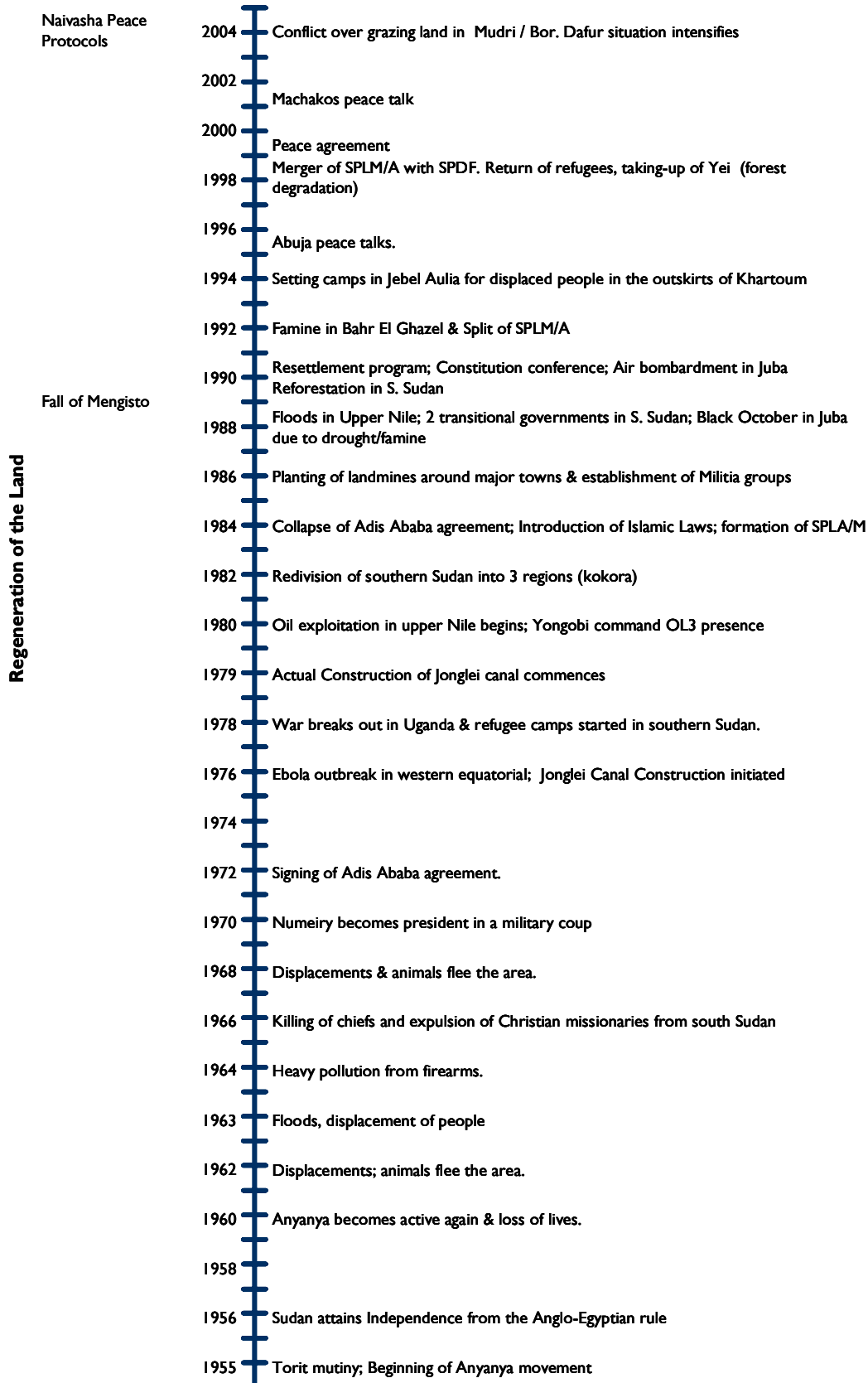
BENEFITS OF CONSTRUCTING THE HISTORICAL TIMELINE

- All the participants gained a better understanding of issues and events that have occurred in Southern Sudan since 1956 and how these events had helped shape and influence the lives of the people.
- They were able to relate past social political events to the use of environmental/natural resources and the state of the environment.
- Participants were able to analyze the state of the environment in Southern Sudan.
- The participants were able to identify some projects implemented in the past which had significant negative impacts on both the natural and human environments such as the Jonglei Canal started in the late 1970s.
- The exercise heightened their awareness on the need to carry out Environmental Impact Assessment/review studies before implementing major development projects.
- Constructing the historical timeline did, indeed, solidify the idea in the participants that EIA /environmental review is not just a tool for use by other countries, but had a role to play in Southern Sudan, too.

On the whole, the participants noted that the war in Southern Sudan had, to some extent, helped to conserve the environment as no meaningful activities were going on. The land had remained fallow for a long period. They further noted that with the anticipated peace in the south and subsequent resettlement programs, land was going to be cleared for farming and other activities. Being anticipatory in planning for the future of Southern Sudan would help to a large extent in preventing/minimizing some of the anticipated impacts of development.

This module was very useful in introducing the participants to Southern Sudan environmental issues as evidenced by the emotive discussion generated both during the group work and groups presentations. It allowed the participants to critically assess the historical development of their country and potential environmental implications of future economic and social developments.

Historical Timeline of Southern Sudan



NOTES ON THE TIMELINE

- 1955 Torit Mutiny – Torit battalion refuses to be transferred to northern Sudan resulting in the beginning of Anyanya movement fighting for the independence of Southern Sudan.
- 1969 President Numeiry becomes President of Sudan by overthrowing president Aboud in a military coup.
- 1971 Initiation of peace agreement facilitated by the World Council of Churches between Anyanya Movement and the government of Khartoum.
- 1972 Signing of the Adis Ababa agreement between Anyanya Movement and the government of Khartoum; Refugees return and their clearing.
- 1976–1977 Ebola breaks out in the western equatorial region and roads and schools closed to prevent spread of the disease. The Jonglei canal construction begins with massive displacement of pastoralists who lived in the area. Secondary schools rioted against the project which was to reduce swamp fisheries, lead to forest destruction and Biodiversity loss.
- 1978 War breaks out in Uganda and refugee camps were opened up in Southern Sudan to accommodate the refugees resulting in the cutting of trees to provide building material and fuel.
- 1982 Sudan divided into three region (Kokora) Decentralisation system is introduced.
- 1988 There is heavy fighting between government forces and SPLM/A which worsens the drought/famine situation in the Juba region.
- 1992 Split of SPLM/A resulting in the formation of two fighting groups, the SPLM/A mainstream led by John Garang and Torit faction led by Riek Machar. There are massacres mainly in upper Nile.
- 1998 Taking up of Yei was followed by forest degradation in Kagulu Teak.

MODULE 2D: AN INTRODUCTION TO ENVIRONMENTALLY SOUND DESIGN

The participants were introduced to the manual on “Environmental Guidelines for Small Scale Activities in Africa.” They were briefed about the organization of the guidelines, which have been developed along sectors. Potential adverse impacts of the different sectors as well as their mitigation measures had been identified in the manual, participants were informed, thereby making it a good reference document.

MODULE 3: PRINCIPLES AND PRACTICE OF ENVIRONMENTALLY SOUND DESIGN³

The participants were taken through this presentation that focused on why ESD is important in ensuring that environmental damage does not occur as a result of environmentally unsound designs. EIA was also introduced again as a tool for ensuring Environmentally Sound Design.

TRANSECT WALK THROUGH THE CHRISTIAN WOMEN EMPOWERMENT CENTRE (CWEC)

The purpose of this additional module to the ENCAP training was to ensure more learning by direct observation. The participants were divided into two groups and each group was assigned a transect to walk through. Due to limitations of time, the groups focused on the area within the perimeter of the CWEC. Group 1 concentrated in the area within the CWEC and was facilitated by Jane Kahata and David Kinyua, while the second group went to the land immediately outside the centre and was facilitated by Ephantus Wahome and Fiesta Warinwa.

A transect walk was defined as a tool that can be used to collect useful environmental information. It entails walking through a given area, which could be through a village, a proposed project area, etc. A diversity of stakeholders representing various groups in an area should be included in the transect walk. The participants were told that they were mimicking villagers in the CWEP.

OBJECTIVES OF UNDERTAKING A TRANSECT WALK

- To give the course participants a chance to take stock of the different environmental components and variables (physical, biological, social and economic) in and around the centre.
- Show the participants how the centre has impacted on the surroundings and vice versa.
- Reinforce some aspects of environmentally sound design.
- Can be used to evaluate/assess project impacts on the environment.

Participants were then briefed about the area to cover and variables to consider or look out for which should include but not limited to:

PHYSICAL ASPECTS OF THE ENVIRONMENT

- Nature of land terrain, whether flat, hilly, degraded
- What are the soil types?
- Rivers streams nearby?
- Signs of soil erosion

BIOLOGICAL ASPECTS OF THE ENVIRONMENT

- What is the tree/vegetation cover like within and around the centre?

³ See also “Annex 1: Briefing Notes and Additional Information” on p. 35.

- Are there any forests nearby and what is their status?
- Animal life within the centre (insects, birds including domestic animals)?

SOCIAL AND ECONOMIC ASPECTS OF THE ENVIRONMENT

- Social organization within and around the centre
- Leadership
- Population size
- Local cultural beliefs, religion and traditions and how do they affect resource use?
- Livelihood activities
- Community resources and access to them (land, water etc)
- Social infrastructural facilities in the neighborhood (schools, hospitals, shops, roads, etc.)

OTHER ISSUES TO BE OBSERVED AND DISCUSSED WHILE TAKING THE TRANSECT WALK

- Planning and siting of the different facilities
- Adequacy of sanitation
- Accessibility
- Cleanliness within the centre
- Types of raw material used in the construction of the centre
- Where were the materials sourced?
- Are there any adverse impacts that can be associated with the sourcing of material and construction of the centre?
- How appropriate are the materials for the uses they had been put to?
- Sustainability of the operations of the centre
- Any impacts (positive and negative) that the centre may be having on the environment.

Each group then presented their observations in plenary based on the categorization indicated above, (physical, biological and social/cultural/economic factors) provided in the briefing notes.

The session was wrapped up by David Kinyua who noted that the essence of carrying out environmental impact assessments and/or reviews was not necessarily to highlight all minor adverse impacts that may arise from a development activity, but rather to identify only significant impacts. Further to this, some of the negative impacts of development can very easily be mitigated against; as such they should not prevent a development project/activity from going on.

LESSONS LEARNT FROM THIS SESSION

- The participants were able to identify environmental problems such as soil erosion within the centre and its surroundings, as well as the causative factors such as lack of/poor drainage;
- They were able to categorize and classify the environment into the physical, biological and social cultural factors, thus reinforcing the definition given for the environment;

- The participants were able to consider some aspects of environmentally sound design in the CWEC. These included the suitability of roofing materials, siting of facilities and orientation, etc.;
- They were exposed to the negative impacts of un-decommissioned projects such as the used pit latrines within the CWEC.

MODULE 4: BASIC CONCEPTS FOR ASSESSING ENVIRONMENTAL IMPACTS

This module introduced the participants to the process and methodology of Environmental Impact Assessment, the goals and principles of EIA. The participants were taken through the phases and steps in the EIA process. Time was allowed for the participants to ask question and/ or seek clarifications. Key points were on how to determine impact significance, consideration of project alternatives and the need to involve/consult stakeholders.

FACILITATORS MEETING

This was held at the close of Day 1 at 6.00 p.m. and the facilitators analyzed the day's events, which were found to be satisfactory.

REVIEW OF DAY I

At the start of Day 2, the activities and highlights of day 1 were reviewed by Fiesta Warinwa who highlighted salient issues arising from all of the previous day's presentations.

MODULE 5A: USAID ENVIRONMENTAL PROCEDURES

The participants were taken through the USAID environmental procedures. Various definitions in the screening process such as exemptions, categorical exclusions were explained, including activities that belong to each of the categories. Initial Environmental Examinations (IEEs) and the steps to follow when undertaking the process were explained in detail. The concept of whether a project is high risk or low risk was also introduced.

MODULE 5B: CLASSIFYING ACTIVITIES USING THE USAID ENVIRONMENTAL PROCEDURES (CLASSIFYING PROJECTS USING REG. 216); REQUIRED DOCUMENTATION AND ENVIRONMENTAL STATUS REPORTS

This covered the process for screening small-scale development project activities under Regulation 216 by going through a range of diverse projects, using the Africa Bureau Environmental Screening Form (ESF). Participants were divided into groups of twos and assigned proposed activities for which they were to decide the classification to put them under. The results were then presented in plenary and discussions made. The exercise was very successful and further helped the participants to fully appreciate and understand the process. Some of the issues generated some good debate indicating that even in the screening process, there must be careful consideration of certain issues.

The preparation of Environmental Status Reports (ESR) for TITLE II programs and examination of sample IEE's were not covered, since most of the participants were not involved in implementing USAID funded projects.

MODULE 6: INFORMATION REQUIREMENTS AND TOOLS FOR SCREENING AND PRELIMINARY ASSESSMENT

The module explained the types of information and data that should be collected while undertaking preliminary assessments. These would include the environmental characteristics of the project areas as well as the social and economic data. Simple tools that can be used for screening and preliminary assessment, which included different types of checklists, map overlays, the Leopold Matrix and networks were introduced and described to the participants. The advantages and disadvantages of each method were also highlighted.

MODULE 9A: PRESENTATION ON NATURAL RESOURCES MANAGEMENT ISSUES IN SOUTHERN SUDAN

The participants were taken through the geographical and biophysical characteristics of Southern Sudan. They were briefed about the status of the environment and natural resources, factors and threats that were likely to impact negatively on these resources and major events and their impact on the environment. This paper generated a lot of enthusiasm among the participants who asked many questions. Time for questions/discussion of issues was allowed after every 30 minutes. While appreciating the fact that the conflict in Southern Sudan may have given some reprieve to the environment in that much of the land had been left fallow during the years of the conflict, participants were made aware of the changes that were expected after the signing of the peace agreement. These would include resettlement programs for internally displaced persons and some of those currently living in exile. More land would be cleared for cultivation and settlements and there could also be transmission of livestock diseases as people moved from one area to the other with their stocks.

The issue of the Jonglei canal came up again and the negative impacts arising from this project were again highlighted.

MODULE 9B: PRESENTATION ON THE SOCIAL ECONOMIC ISSUES IN SOUTHERN SUDAN

The major social economic issues in Southern Sudan were highlighted and they included Internally Displaced Persons (IDP's) for which Sudan has the highest number in Africa, refugees, HIV/AIDS, poverty and the negative impacts of oil exploration and production in Southern Sudan. It was noted that with the anticipated peace agreement, the IDPs and refugees will be returning to Southern Sudan and proper planning for this will be needed to avoid the negative impacts of human settlements. Similarly, the returnees will exert more pressure on the natural resources such as land and forests. Use of EIA will be helpful in minimizing and/or alleviating some of the anticipated negative impacts.

MODULE 10: INTRODUCTION TO MITIGATION AND MONITORING

Basic concepts and terminology in mitigation and monitoring were explained to the participants. It was noted that mitigation and monitoring were integral parts of environmentally sound design in that they ensure identified negative impacts are tracked down and remedial measures put in place to reduce the undesirable effects to a practicable minimum. It was also explained that mitigation measures should be identified during project design and implemented in all the phases of the project cycle. Mitigation and monitoring plans should also specify the person(s) responsible for implementation of mitigation and monitoring plans, monitoring indicators, frequency of monitoring and the budget.

The USAID procedures do not provide details on the guidelines for implementing adverse impact mitigation and monitoring measures. It was therefore stressed that there was a need to establish linkages with the host country's Environmental Guidelines to provide guidance on mitigation and monitoring, where they existed. National environmental laws and standards should form the benchmarks in monitoring and mitigation, or if

these did not exist in the host country, they could be borrowed from other organizations, such as the World Health Organization, for drinking water standards.

MODULE 11: FIELD TRIP BRIEFINGS⁴

Participants were briefed about the field studies to be undertaken on the third workshop day. They were to visit three different sites namely the Kagulu Forest Rehabilitation Project about 8 km from Yei Township, Water and Sanitation projects in the Yei town and a Rural Road Rehabilitation project.

Participants were also guided on useful information for the field exercises such as the Environmental Guidelines for Small-Scale Activities in Africa and the relevant chapters for the respective case studies. They were then asked to identify their chairpersons, rapporteurs and persons who would tackle different key issues identified for discussion in each case study.

The third workshop day was devoted to the field visits and participants left early and returned by about 2 p.m. After taking their lunch, they went back to their groups to start discussing their case studies and prepare environmental reviews, which were facilitated by all four facilitators.

⁴ See Annex 2 for Field Case Study Site Descriptions.

PRESENTATIONS ON ENVIRONMENTAL REVIEWS FROM THE CASE STUDIES

CASE STUDY I: KAGULU TEAK FOREST REHABILITATION PROJECT

Project cycle- Activities

Impact

I Feasibility/Planning & Design

- Identification of area/ land
- Natural vegetation forest
- People settlement
- Animals
- Clay loamy soil
- Location- West of Yei Town, about 8 kms
- Space coverage of 1,040m
- Streams/ passing through
- Flat and sloppy area/land
- Consultant work
- Identification of sites for relocation of the community land
- Consultation with the community leaderships

No adverse impacts identified

Construction Phase Activities

- Clear access road
- Relocation/ resettlement
- Raising of seedling for trials
- Preparation of field for transplanting of seedlings

Deforestation

Soil erosion

Clearance of indigenous species

Loss of natural vegetation

Loss of soil nutrients

Proper management of Teak plantation i.e.

- Weeding
- Thinning
- Pruning
- Removal of sick and vigar plants
- Access roads

Poor management during the war

Decommissioning Phase

- Identification of machinery for felling logs
- Identification of labour and train them
- Identification of market and investors and storage sites
- Identification of site for residue (off-cuts and sawdust)
- Harvesting and processing of products

- Poor road conditions

- Health hazards

- Lack of insurance cover

Impact/Matrix for Kagulu Forest Rehabilitation Project

PHYSICAL ENVIRONMENT

BIOLOGICAL ENVIRONMENT

SOCIAL ENVIRONMENT

Planning and Design Phase

No adverse impacts identified

No Impacts

No adverse impacts identified

PHYSICAL ENVIRONMENT	BIOLOGICAL ENVIRONMENT	SOCIAL ENVIRONMENT
Construction Phase		
1. Loss of agricultural land (-ve) MR	Loss of soil nutrients (-ve) HR	Public health (-ve) HR
2. Soil erosion arising from vegetation clearing	Loss of aquatic ecosystems (-Ve) MR	Employment generation during the establishment stage of the project (+ve) LR
3. Loss of indigenous species of flora and fauna (-ve) HR	Loss of endangered species (-ve) HR	Community instability arising from the relocation of some of the local people to make way for forest establishment (-ve) MR
4. Replacement of natural vegetation by the teak forest leading to loss of the natural vegetation.(-ve) MR	Loss of migratory species due to loss of their habitat (-ve) MR	Erosion of cultural/religious values as people from other parts of the country are employed by the project (-ve) MR
Operation Phase		
1. Energy- Cutting of branches for fire wood (-ve)H	Beneficial plants were lost (-ve) H	Employment (+ve) HR
2. Air quality (-ve) H		
3. Poor drainage system on the road (-ve) H	Pest plants remained (-ve) H	
4. Soil erosion (-ve) H	Aquatic/ terrestrial LR	

KEY:

- Ve = Negative Impact
- +Ve = Positive impact
- HR = High Risk
- MR = Medium Risk
- LR = Low Risk

ISSUES RAISED IN PLENARY ABOUT CASE STUDY I

- Should the group have looked into project activities in retrospect or have focused on what the impacts of the proposed rehabilitation would be?
- The classification of impacts into high risk, low risk or medium risk should be given serious consideration because if a project had many activities that were classified as high risk, it may ultimately give the wrong impression to would-be assessors/donors. For, example under the USAID environmental procedures, projects classified as high risk are usually not given due consideration.
- There was confusion in the group as to what the activities of the decommissioning phase were. The activities listed by the group under the decommissioning phase are actually activities of the operation phase. The group was informed that for a forest establishment project, the project does not end after establishment of the plantation.

CASE STUDY 2: RURAL ROADS REHABILITATION PROJECT (YEI-KAYA ROAD)

Distance of the Road - 77.3 km

Project Components	Environmental Components	Physical Environment					Biological Environment								Social Environment							
		Agricultural Lands	Soil Erosion	Air Quality	Ground Water Quality	Noise	Aquatic Es.	Wetlands	Terrestrial	Endemic Sp.	Migratory Sp.	Beneficial P	Microorganisms	Disease Vector	Cultural / Religious	Public Health	Resource Land Use	Employment	At Risk Population	Migrant Population	Community Stability	Tourist
Construction																						
Campsite Construction		Y	Y	Y	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y
Borehole Rehabilitation		N																				
Employment		N													M	H	M	M	M	L	M	-
Waste Management		-		M	M	-	M	M	L	-	M	M	H	H		H	H				M	L
Borrow Pits		H	H	L	L	L	H	H	H	M	H	M	H	H	L	H	H	L	L	H	M	H
Road Diversion		H	H	L	L	M	H	H	H	M	H	H	H	L	-	L	M	-	L	-	L	L
Cut Off Drains		H	H	-	H	-	H	H	M	L	L	L	H	H	-	H	H	L	H	-	H	L
Operational Phase																						
Uncontrolled Axle Weights		M	H	M	M	M	H	H	M	L	M	L	L	H	-	H	L	M	M	L	M	M
Increased Charcoal Production		H	H	H	L	M	H	H	H	H	H	H	H	M	H	M	H	H	H	M	M	M
Decommissioning																						
Borrow Fits																						
Fill It/Save Soil																						
Rehab																						
Plant Grass																						
Plant Trees																						
Waste Management																						
- Cover the Pit																						
- Create Dumping Site																						

NB: The decommissioning phase does not have any negative impacts

Key

- Y - There is an impact
- N - No impact
- H - High Impact
- L - Low impact
- M - Medium impact
- No impact

ISSUES RAISED IN PLENARY ABOUT CASE STUDY 2

- Were all the impacts with a score of high risk really high risk? The participants were cautioned against classifying activities as high risk if the adverse impacts could easily be mitigated, as this sends a wrong message to whomever is evaluating the reports.
- Uncontrolled axle load was not an activity, although it impacted negatively on the road.

CASE STUDY 3: WATER AND SANITATION REHABILITATION PROJECT

Project Location: Yei Township

Main Water Source: Mainly boreholes, but also a few wells, springs, and streams

Sanitation: Pit latrines

The following five sites were visited and they included: Lomuku II (boreholes & spring), Dar-Es-Salam (Boreholes), Hai Leben (Boreholes, well, very clean area), Hai Simba (Boreholes) and Gabat (Boreholes).

The table below summarizes the main issues identified in the field.

Positive Issues	Negative Issues
<ul style="list-style-type: none">• There is a cost sharing policy in place• Gender issues considered in the management of the boreholes• Socially disadvantaged groups e.g. disabled persons are empowered• Some boreholes were very clean• Some boreholes were being rehabilitated	<ul style="list-style-type: none">• Boreholes were poorly maintained• Drainage system was poor• Waste disposal was poor• There was soil erosion• Latrines were very close to water sources and houses• There was social tension among different interest groups due to boreholes usage• Population density• Risk of water contamination due to rusting in the Hai Simba borehole• The population density was high

The following were the positive and negative impacts relating to the Water and Sanitation Project.

NEGATIVE IMPACTS IDENTIFIED

- Illness and poor health, deaths and epidemic, etc resulting from contamination of water resources.
- Risk of surface and ground water contamination from toilet wastes due to improper siting of pit latrines. The latrines were found to be too close to water points or to be upstream of water sources.
- Existence of breeding ground for mosquitoes and other disease vectors as a result of poor drainage systems. There was also a foul smell and loss of aesthetics in the area.

POSITIVE IMPACTS

- There was easy access to water in the town and market.
- Rehabilitation exercise that was going on well and thereby helping improve the water and sanitation situation in Yei.

ACTION POINTS TO IMPROVE ON THE MANAGEMENT OF BOREHOLES

There was a need to sensitize the community on:

- Borehole maintenance and appropriate hygienic practices which would include the siting of pit latrines *vis à vis* the water points and houses;
 - Need to train water management committees on maintenance and operation of water and sanitation facilities;
 - Local communities should be involved in the planning and decision making process of the water and sanitation projects;

- Networking and mediation between communities, local authorities, NGOs, etc. was necessary for improved management of the projects. This is because water and sanitation projects in the area had many actors who needed to be working together. The government as the regulatory agent also needs to be involved;
- The number of boreholes should be increased to reduce confusion/ fighting over water points.
- There was a need to find alternatives to boreholes such as the establishment of urban water system, e.g. pipes.
 - Springs should be rehabilitated to provide alternative water sources;
 - There was need to recycle waste water and use it for irrigation and livestock purposes;
 - Better solid waste management systems such as digging garbage disposal pits and recycling of wastes should be provided;
 - Public toilets should be provided in the market by the traders/city council;
 - The various sources of water should be tested regularly for water quality; and
 - Hygiene promoters should create more awareness from house to house.

CONCLUDING REMARKS

We learned that addressing water and sanitation issues can serve as ways of mobilizing and empowering the socially disadvantaged groups, e.g. women and disabled persons.

The team had a great opportunity to learn about the environmental impacts related to water and sanitation. It is therefore important that EIA should be carried out before any project is implemented.

PRESENTATION AND DISCUSSION OF MITIGATION AND MONITORING PLANS

The groups finalized their mitigation and monitoring plans prepared the previous day. Presentations were then made and discussed in plenary.

CASE STUDY 1: MITIGATION AND MONITORING PLAN FOR KAGULU FOREST REHABILITATION PROJECT

Impact	Mitigation Measures	Indicator	Responsible	Monitoring Frequency	Cost Low / High
1. Soil Erosion	<ul style="list-style-type: none"> • Proper drainage system by filling and rehabilitation of the roads 	<ul style="list-style-type: none"> • 2 Kms that has been rehabilitated 	Forest Managers	Twice a year	Low
a). On road b). On farm - Pulling of logs	<ul style="list-style-type: none"> • Correct machines to be used. 	<ul style="list-style-type: none"> • Reduction of soil erosion 	Forest Managers	Quarterly	Low
2. Health hazard	<ul style="list-style-type: none"> • Training of operators • Provision of protective gear • Provision of first aid box • Life insurance cover for those sawing timber 	<ul style="list-style-type: none"> • #of accidents reduced • # of sick cases reduced 	Administration	Quarterly	Low
3. Forest Fire Damage	<ul style="list-style-type: none"> • Proper maintenance of fire belts • Removal of sawdust & dry branches • Storage of sawdust far from the forest 	<ul style="list-style-type: none"> • Fire belts established • Storage / disposal system in place 	Forestry Rangers	Once a year	Low
4. Low or Poor Timber Production	<ul style="list-style-type: none"> • Teak trees cut at the right height (12" below) • Training workers 	<ul style="list-style-type: none"> • Length of cutting height ensures sprouting 	Forestry Rangers	Three times a year	Low

ISSUES RAISED IN PLENARY PERTAINING TO THE FOREST REHABILITATION PROJECT

- Is forest fire damage the impact or is it the risk of fire that should be considered as the impact?

CASE STUDY 2: MITIGATION AND MONITORING PLAN FOR THE RURAL ROAD REHABILITATION PROJECT

Impact	Mitigation measure	Indicator(s)	Responsibility	Monitoring frequency	Cost High/Low
1. Stagnant water leading to road degradation (caused by poor construction of some parts of the road)	Regular road maintenance by clearing the cut off drainage	Absence of standing water on the road Cleared cut off drains	Joint effort between the community and authorities on the ground	Twice a year after long rains and after short rains	Low
2. Increase of HIV/AIDS as an indirect impact	Create awareness by erecting bill boards with information on HIV/AIDS	Billboards Number of meetings	Contractor	Once a year	Low
3. Increase in the road damage as an indirect impact	Create awareness by erecting billboards with information on road safety	Highway signs & billboards	Contractor	Once a year	Low
4. Increase in uncontrolled charcoal and timber/poles production	Establishment of toll stations on roads and border points to check	Establishment of check points Revenue collected (amount)	Local authority	Once a month	Low

ISSUES RAISED IN PLENARY PERTAINING TO THE MITIGATION PLAN ON RURAL ROADS REHABILITATION

- Is the contractor for road rehabilitation projects obligated to erect billboards for creating awareness on HIV/AIDS or is it the local health authorities? It was explained that most of the impacts of road rehabilitation projects would occur during the operational phase of a project long after the contractor has left the site. As such, the contractor is not bound on most matters/issues pertaining to the operation phase of the project such as increased HIV/AIDS prevalence due to improved communications, movement, and mixing of the local people.
- Similarly, the contractor would only be held responsible for the maintenance of the road if the contract clearly specified that they would undertake maintenance work for a given period of time after project construction.
- Wouldn't the authority in charge of forest management be party to monitoring illegal charcoal/timber and poles production? It was noted that agencies that have a direct responsibility in the management of a resource should be involved in monitoring how well such resources were being utilized. They should also anticipate that improvements in accessibility would confer both positive and negative benefits, and therefore put mitigation measures in place.

CASE STUDY 3: MITIGATION AND MONITORING PLAN FOR THE URBAN WATER AND SANITATION PROJECT

Major Impacts	Mitigation Measure	Indicator(s)	Responsibility	Monitoring Frequency	Cost Low/High
Contamination of surface and ground water	<ul style="list-style-type: none"> Relocation of the latrines down-slope of the water source Sensitization of the community, e.g. maintenance of hygienic practices Monitoring and repairing of broken pipes, etc. 	<ul style="list-style-type: none"> Number of relocated latrines List of trained persons Number of repaired pipes 	SRRC water project coordinator	1-2 years	High
Prevalence of diseases resulting from poor drainage	<ul style="list-style-type: none"> Monitoring of the drainage and keeping the debris clear 	<ul style="list-style-type: none"> Reduction of water borne diseases 	Community leaders	Every 2 weeks	Low
Easy access to water	<ul style="list-style-type: none"> Increased boreholes 	<ul style="list-style-type: none"> Pure water 	SRRC water and sanitation coordinator	Twice a year	High

ISSUES RAISED PERTAINING TO THE WATER AND SANITATION PROJECT IN PLENARY AFTER PRESENTATION OF THE MONITORING AND MITIGATION PLAN

- Mitigation plans need to be very explicit about the monitoring frequency, responsibility for monitoring, monitoring parameters and indicators, and the budget for implementing mitigation and monitoring plans. In this regard, terminology such as *regular for monitoring* should be avoided.
- Monitoring frequency needs to be thought out very carefully. Usually, managers of any project should undertake monitoring of the activities on a day to day basis, therefore the monitoring frequency proposed in the mitigation and monitoring plan does not have to be so frequent.
- Monitoring indicators need to be very clear and explicit for example, for drinking water, bacteriological tests and chemical analysis are necessary and the results should be within the recommended standards for drinking water. (In the absence of national standards, World Health Organization standards for drinking water should be applicable).
- Positive impacts do not need to be mitigated and as such they should not be included on the mitigation and monitoring plan. The group, however, explained that they were focusing on how they can enhance this positive benefit.

MODULE 14: BEYOND THE IEE, ENVIRONMENTAL ASSESSMENTS AND PROGRAMMATIC ENVIRONMENTAL ASSESSMENTS

Participants were taken through a discussion on what happens after the screening process indicates that an activity is of high risk, requiring that it be subjected to a fully-fledged EIA. They were also briefed about Programmatic Environmental Assessments (PEAs), Strategic Environmental Assessments (SEA) as well as the detailed procedures and steps for carrying out EIAs/EAs. The participants were given a chance to ask questions especially on EIA, SEA, Umbrella IEE's and PEA's.

MODULE 15: ENVIRONMENTAL ASSESSMENT OF PESTICIDE USE IN USAID ACTIVITIES

Participants were informed that evolution of EIA and regulation 216 were very closely linked to pesticides use. They were also given the definition of pesticide use according to USAID. This generated a lot of interest and debate. Issues were raised on what should be done in case pesticides were to be used in a project. The participants were informed that activities requiring use of pesticides should be identified very early in project design to allow for the preparation of Pesticide Evaluation Report and Safe Use Action Plan (PERSUAPs), which is a pre-condition for funding of projects/activities involving pesticide use by USAID.

GENERAL ISSUES DISCUSSIONS AND QUESTIONS

Participants were given about one hour during which time they asked general questions and raised issues for discussion. Most of the questions focused on the projects and programs that USAID was currently undertaking in Southern Sudan and its partner institutions. They also dwelt on the way forward for Southern Sudan and major environmental issues that needed to be addressed. It was also noted that as the country prepares for peace and subsequent reconstruction, there was need for an enhanced capacity to supervise the reconstruction works if they were to confer benefits to the people. Their questions were responded to by Ephantus Wahome, David Kinyua (Both of USAID/REDSO) and West Yugulle of the Sudan Field Office.

EVALUATION OF COURSE EXPECTATIONS

The participants were taken through all the expectations that they had offered at the beginning of the course and they noted that all their expectations had been met.

COURSE EVALUATION, SYNTHESIS AND RECOMMENDATIONS FOR FOLLOW UP ACTIVITIES

Participants were given the course evaluation forms and instructions on how to fill them out. Of importance was an additional question on whether they would have discussed issues freely if there were male participants in the course. The forms were then collected and analyzed. The participants gave an average score of 4.5 out of a score of 5, which was a very good rating of the course, comparing well with the Eritrean course, which had an average score of 4.3.

CLOSING CEREMONY

**By Mr. David Lokonga,
County Secretary, Yei**

Mr. Yugulle welcomed the County Secretary to the closing ceremony and thanked him for finding time to attend the ceremony. He then invited Mr. Wahome to brief the Secretary on the objectives of the training workshop and what the workshop had achieved.

Mr. Wahome informed the County Secretary that this was the second time the course was being held in Southern Sudan, being one among several other similar courses that have been conducted throughout Eastern and southern Africa (ESA) during the last ten (10) years. He stressed that the purpose of the course is

to assist USAID Bilateral Mission Staff, Partners and Host Country Governments in capacity building for environmental assessments to achieve environmentally-sound project design.

Mr. Lokonga closed the workshop and reiterated that women should actively participate in all spheres of development. He noted that their role is especially important in that they are in touch with real issues and noted that with the training received, they should be able to contribute more positively towards environmental management. The participants were very encouraged by the Secretary's inspiring speech.

PRESENTATION OF CERTIFICATES

The Guest of Honor, Mr. Lokonga, assisted by Mr. Yugulle and Mr. Wahome, presented the course participants with certificates.

CONCLUSIONS, RECOMMENDATIONS, AND LESSONS LEARNED

1. The participants displayed a lot of enthusiasm in the course and participated actively throughout the course. The mood was lively, with a lot of deeply searching questions asked. On the whole, the course was very successful in that it not only conferred skills in environmental reviews and assessments, but also heightened the participants' awareness and understanding of the broad environmental issues likely to occur in the New Sudan. This is especially important after peace returns to the country, leading to large numbers of returnees with high demands for establishment of new settlements.
2. The construction of the historical timeline and the ensuing discussions made it possible for the participants to identify and discuss major past development projects that caused major adverse environmental impacts, such as the construction of Jongelei Canal, development of oil wells, and harvesting of teak forests, etc. There is a need to modify some of the training modules and slides so as to include local examples.
3. The course was punctuated by a number of energizers and ice breakers that kept the participants lively and awake and prevented boredom. After the first day, long presentations included a break every 30 minutes and the participants would be given an opportunity to ask questions before recommencing. Energizers and ice breakers were selected on an ad hoc basis and were largely repetitive. There is a need to select and develop specific energizers and ice breakers that every trainer should know and be able to easily apply easily during the course of a presentation when signs of boredom or lack of interest are noted.
4. None of the participants in the course was involved in the preparation of USAID environmental compliance documentation (e.g. IEEs, environmental review reports, environmental status reports, etc.) It was therefore decided that some of the training modules should be modified to suit the specific interests of the participants. This resulted in a number of training modules being shortened to remove unnecessary details (e.g. USAID Environmental Procedures, Going Beyond the IEE, EIA Tools, etc.). It is important that future courses be specifically tailored in accordance with the interests of specific groups.
5. For the first time, the proceedings of course case study field surveys and environmental review reports were put together as a report. It would be appropriate for this to be done in all future courses so that the proceedings can be used as a part of the training materials and be made available to the participants for reference.

ANNEXES

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ANNEX 1: BRIEFING NOTES AND ADDITIONAL INFORMATION FOR FACILITATORS ON MODULES 2 AND 3

MODULE 2A: WHAT IS THE ENVIRONMENT? (BRIEFING NOTES)

The word environment is going to be mentioned in this training so often. It already appears in each of the three course objectives. Activity 1 is aimed at giving the participants an opportunity to explore and understand fully the meaning of the word “environment” in its broadest sense.

Each participant will be given a card on which they will write down their concept/understanding/meaning of the word environment. You should also write down five or more “things” that you consider part of the environment). Suggested time: 5 minutes.

All the cards will be collected and the participants’ definitions will be reviewed and consolidated in a plenary session.

The facilitator will wrap up the session by adding any environmental components that may not have been identified by the participants. Compare the lists generated by the participants and add any of the following issues/items that are not included in their list. (30 minutes)

MODULE 2C: CONSTRUCTING A HISTORICAL TIMELINE OF SOUTHERN SUDAN (BRIEFING NOTES)

The following are the highlights from module 2B:

- Environmental crisis that occurred in the wealthy developed countries;
- Factors that precipitated the crisis;
- Why developing countries should care about EIA.

As a follow up to module 2B, it is important to understand what the situation has been like in Southern Sudan. This will be achieved through the construction of a historical timeline for Southern Sudan

WHAT IS A HISTORICAL TIMELINE?

- A historical timeline records and analyzes important events that have taken place over time in a particular area. It indicates past trends, events, problems and achievements.
- Members of a community generate it themselves.
- Changes recorded can be social, political, and environmental that are significant.

The participants will review environmental changes that have occurred in Southern Sudan over the last 30 years by constructing a historical timeline for Southern Sudan.

OBJECTIVES OF CONSTRUCTING A HISTORICAL TIMELINE

- To give a perspective on major events that have occurred within a given area over time;
- To help participants understand environmental changes that have occurred in Southern Sudan over time;
- To give participants insight into the patterns of resource use and management in Southern Sudan;
- To help participants identify some local examples of positive and negative impacts of development projects and programs;
- To kindle an interest in the participants on the need to conduct Environmental Impact Assessments/Reviews of development activities;

- As a tool, it can be used to collect background and baseline information in project development or in environmental reviews.

HOW TO CONSTRUCT A HISTORICAL TIMELINE

The standard procedure of constructing a historical timeline is described in the additional notes provided under this module.

For our purposes, participants should think about major events (social, political, economic, environmental etc.) that have taken place over the past years 30 years.

The following are some questions that can help you remember some of these events.

- What is the first important event that you can remember in Southern Sudan?
- Have there been significant migrations into or out of the place?
- Have there been serious natural disasters such as droughts, epidemics, famines, and floods?
- What are some of the negative environmental changes that have happened in Southern Sudan?
- What are some of the achievements in Southern Sudan?

STEPS TO FOLLOW

- On a flip chart or chalkboard, mark a line that is divided into intervals equivalent to the time period to be covered, in our case 48 years.
- The bottom of the line should have the earliest date while the upper end of the line should have the current year.
- List events that have occurred starting from the earliest date marking the year that they happened.
- Allow for consensus building, corrections, etc. as the timeline is being constructed.
- Allow for some discussions about the timeline as it is being constructed by asking relevant questions such as: Are there any changes that you notice with regard to resource use, distribution, degradation, etc. How has this been affecting the people of Southern Sudan generally? What are the major causes of some of these changes? How can they be prevented? How have people coped with these changes?
- Capture discussion points on the timeline drawing or note them on a separate sheet.

MODULE 2C: HISTORICAL TIMELINE (ADDITIONAL INFORMATION)

1.0 WHAT IS A HISTORICAL TIMELINE?

A historical timeline is one of the participatory Rural Appraisal methodologies used to record and analyze important events that have taken place over time in a given community. Every community has a heritage of experiences and environmental knowledge that influences present attitudes and behaviors (NES, 1991). The knowledge, attitudes and experiences of local people are critical in the design of environmentally sound projects. A timeline therefore is a list of key events in the history of a community that helps identify past trends, events, problems and achievements in its life (NES, 1991). These events can be social, political, environmental or anything considered significant to the individuals and community involved (Boyle J. & Patterson H., 2002).

2.0 OBJECTIVES OF CONSTRUCTING A HISTORICAL TIMELINE

The following are the objectives of constructing a historical timeline:

- Gives a perspective on major events that have occurred within a given area over time. These could be social, political, or environmental.
- Helps to understand changes (social, political and environmental) that have occurred in a community.
- Gives insight into the patterns of resource use and management.
- Elicits knowledge about how the local community has handled or coped with major event that have occurred in their lives.
- As a tool, it can be used to collect background and baseline information in project development or in environmental reviews.
- The development of a timeline can play an important role by providing background information for understanding and analyzing the current situation in the community, which is a critical step in project design.
- A timeline can also be used in project monitoring and evaluation. Community members are asked to draw a timeline of the project and look at what activities have taken place, when decisions were made, and what has happened in the community as a result of the various activities (Boyle J. & Patterson H., 2002). In doing such an exercise, factors that may have led to under or over achievement of project goals can be identified, thereby improving on project design.

3.0 WHO SHOULD PARTICIPATE IN THE DEVELOPMENT OF HISTORICAL TIMELINES?

All the stakeholders in a community should participate. Elders and long-time residents in a community will have the most knowledge and experiences and are therefore a critical group. Care should be taken to include women and children who are usually left out and yet play a major role in resource use and management and, as such, are really in touch with the environment. Different groups of stakeholders may also have diverse views about an issue. Similarly, people of different social status and background may provide different perspectives, and ideas on an issue. The selection of those participating must therefore be carefully done to include all the groups.

Literacy is not a requirement to participate in a historical timeline exercise. Symbols and simple drawings can be used to communicate information. In this case, the facilitator can write additional notes on the timeline to ensure that the participants' meaning and interpretation of the symbols are accurately captured (Boyle J. & Patterson H., 2002).

HOW TO CONSTRUCT A HISTORICAL TIMELINE?

Those participating in a historical timeline construction should be identified using the criteria that has just been described. They are then informed of the meeting time and place. Once they have assembled, they are briefed about the exercise and its objectives.

Participants could be divided into several groups of about eight to twelve members who are ideal. After being divided into groups, time is allowed for discussion in the group.

Depending on the levels of literacy of those participating in the exercise, the facilitator should make a decision on how to communicate with the participants. Using markers, pens and paper, chalk or a stick on the ground, a line is drawn and the current year marked at one end. The other mark is determined by the period to be covered by the timeline and it will be a starting point of the timeline. The line drawn is then divided into intervals of one or two years.

The facilitator then asks the participants what events (social, political, economic, environmental, etc.) have taken place in the past years that were significant to their community. As the participants start naming the events, they are marked on the line that has already been drawn against the years when the events occurred. Words or symbols can be used to record the events on the timeline.

Often, this is done as a group so that people's ideas can build on one another. However, a few people should not dominate the exercise and the facilitator should ensure the participation of all. In some cases, it may be appropriate to allow different stakeholder groups to do their own timeline. This is especially true for women and minority groups who may not be able to air their views.

The objective of a timeline is not to have a complete and perfect historical record, but to elicit information about their community. Use the timeline creation exercise as a chance to gain further understanding of community perceptions and context for the project. What is left off the timeline can be an interesting comment on what the community sees as significant.

Discussions about the timeline are very important. While the timeline is being created, you can start asking questions relevant to the project such as: "Do you see any patterns of how the community dealt with drought?" "Why was building the road such a significant event?" "When did other donors stop coming to the community and why?" The discussion points can be captured on the timeline drawing or noted on a separate sheet (Boyle J. & Patterson H., 2002). Timelines that have not been drawn on paper should be copied onto it.

MODULE 3B: TRANSECT WALK THROUGH THE WOMEN'S CHRISTIAN CENTRE (BRIEFING NOTES)

Participants will be divided into two groups and will walk in different directions.

A transect walk is a tool that can be used to collect useful information. It entails walking through a given area, which could be through a village, a proposed project area, etc. A diversity of stakeholders representing various groups in an area should be included in the transect walk.

WHAT IS A TRANSECT WALK?

A transect is usually a straight cut through the community, and tries to cover as many of the ecological, production, and social groups of the community as possible. Often, several transects are carried out to get a complete picture of a community or area.

OBJECTIVES OF UNDERTAKING A TRANSECT WALK

- Give the course participants a chance to take stock of the different environmental components and variables (physical, biological, social, and economic) in and around the centre.
- Indicate to the participants how the centre has impacted on the surroundings and vice versa.
- Reinforce some aspects of environmentally sound design.
- It provides mapping information.
- Can be used to verify information that is already collected on a sketch map.
- Can be used to collect information for the review and evaluation of project impacts (both positive and negative).
- Gather information to be used in project formulation and design.

Transect walks usually involve asking questions, pointing out and mapping what is being seen. Issues to document should include but are not limited to different land uses and vegetation zones, local markets, community service centres, schools, and so on.

As you walk through the centre, observe keenly what is going on in the centre and its surroundings.

Issues to consider while on the transect walk are:

PHYSICAL ASPECTS OF THE ENVIRONMENT

- Is the land terrain flat, hilly, degraded,

- What are the soil types?
- Rivers streams nearby?

BIOLOGICAL ASPECTS OF THE ENVIRONMENT

- What is the tree/vegetation cover like within and around the centre?
- Are there any forests nearby and what is their status?
- Animal life within the centre (insects, birds, including domestic animals)

SOCIAL AND ECONOMIC ASPECTS OF THE ENVIRONMENT

- Social organization within and around the centre
- Leadership
- Population size
- Local cultural beliefs, religion and traditions and how they affect resource use
- Livelihood activities
- Community resources and access to them (land, water, etc.)
- Social infrastructural facilities in the neighborhood (schools, hospitals, shops, roads, etc.)
- Is the centre's environment kept clean?

OTHER ISSUES TO DISCUSS WHILE TAKING THE TRANSECT WALK SHOULD INCLUDE:

- Planning and siting of the different facilities
- Adequacy of sanitation
- Accessibility
- Types of raw material used in the construction of the centre
- Where were the materials sourced from?
- Are there any adverse impacts that can be associated with the sourcing of material and construction of the centre?
- How appropriate are they for the uses they have been put to?
- Sustainability of the operations of the centre
- Any impacts (positive and negative) that the centre may be having on the environment.

Each group will present their observations in plenary. The presentations should be based on the subheads provided in the text. The facilitator will wrap up the session (10 minutes).

MODULE 3B: TRANSECT WALK (ADDITIONAL INFORMATION)

WHAT IS A TRANSECT WALK FROM A DEVELOPMENT PERSPECTIVE?

The Transect Walk is a Participatory Rural Appraisal (PRA) methodology tool used to gather spatial data through direct observation. It summarizes the local conditions, the local communities' problems and opportunities (NES, 1991). The tool can be used at various stages of the project cycle.

RATIONALE OF WALKING THROUGH A TRANSECT

Often planning takes place in the confines of a meeting place or room. The Transect Walk gives community members a chance to take stock of the current physical, environmental, social and economic situation in their community, and how a particular project may affect the community, through direct observation and discussion.

This exercise may reveal that there are differing visions in the community of what people would like to see happen in a particular project. If this is the case, the local community discusses issues of common interests, and how they can be achieved through the project or other means. Points of variance are also discussed to have a better perception of local issues.

Having a common vision and goal is critical in ensuring project sustainability.

Issues raised during the discussions while on the transect walk, and when the group meets afterwards to discuss their findings, can provide important input into the planning of a project.

When evaluating project activities later on, the same exercise can be carried out again. Community members walk through the project site observing, asking questions, and discussing how the project has affected the community – socially, environmentally, and economically. They can then identify what helped the project to get where it is now, what obstacles remain and how they are being overcome, and what the community still has to work on to achieve their vision (Boyle J. & Patterson, H., 2002).

HOW IS THE EXERCISE CONDUCTED?

A wide range of the stakeholders in the project area and/or community are invited to participate in the transect walk. Care is taken to include disadvantaged and minority groups.

A mixed group of 12-15 people at a time are preferred.

Depending on the purpose of the walk and actual information that needs to be collected, the participants in the walk should be properly briefed. A short brainstorming and planning session is allowed during which actual issues of importance to be observed are identified.. Examples of this may include:

- Collection of various aspects of biophysical and socioeconomic data
- Potential environmental effects of a project;
- Who might be personally affected both positively and negatively,
- Where is the best site for project works and activities, and why.

Roles are also assigned before the exercise commences.

Each team is then assigned to do their transect walk in a certain direction (e.g. north, south, east, west) so that each covers a different part of the community. Every team takes with it the brainstormed questions as their guide to what they are going to look out for, and collect information about.

Community members then walk along the identified transects(s) through their community and/or proposed project site when used at the planning stage. As they walk through the designated transects, they collect information on issues related to the community and the project through direct observation.

Information collected is documented and certain aspects of the environment are also mapped. These variables may include different land uses and vegetation zones, local markets, community service centres, schools, and so on.

Issues of concern are discussed in the group to gain a deeper understanding of what is being observed. Issues can also be clarified by asking questions to people encountered on the way. The teams can take pens and paper with them in case they want to record information or make maps or drawings. Transect records can

take a variety of forms depending on the skills of the participants. For example, they may be just notes on specific locations, simple maps with notes on them, or more detailed 'cross sections' with different kinds of information noted for each part of the transect.

Depending on the size of the area to be covered, the teams agree to meet back at a certain time (e.g. 2-3 hours later) to share what they learned on their transect walks.

The teams then meet as a group and share what they learned. This information can be mapped out on a large surface in order to get the full picture of what came out of the transect walks. Some information can be grouped together if certain themes start to emerge.

The resulting information will give the community more knowledge to work with in planning the project. For example, it can help in choosing a project site(s), identifying environmental concerns, raising waste disposal issues, and identifying other issues that the project should focus on. After discussing the results of the transect walks, the community may decide they are ready to move on to another phase of project planning. They may decide that an environmental action plan is necessary, or that they are now ready to do a Present and Future exercise to start to build a common vision for the project.

ANNEX 2: FIELD CASE STUDY DESCRIPTIONS FOR THIS COURSE

CASE STUDY I: KAGULU FOREST REHABILITATION PROJECT

I.0 INTRODUCTION

The distribution of teak forests in Southern Sudan is quite extensive. These forests produce hard, high quality timber and have been subjected to extensive poorly regulated management and logging practices during the war period, which have resulted in poor timber production and poor regeneration of the trees. The demand for timber and poles for building purposes is likely to rise in the future as the local population increases due to the return of refugees. Plans are underway for rehabilitation of the teak forests, through introduction of appropriate timber harvesting methods so as to ensure sustainable production of teak timber products.

This case study is located in Kagulu Forest, which is one of the hard wood plantation forests, that covers an area of 1,040 hectares. The forest has undergone extensive logging by different actors in the past, and a concession had been awarded to a company that selectively harvested the mature timber, leaving uneven stands of trees in place. In recent past, timber harvesting was carried out by cutting the tree stems at a height of about 0.9 meters from the ground. This has adversely affected the regeneration of the plantation, as the re-growth from such stumps are normally heavily bent (poor quality wood) and tend to break and fall off before maturity. A case in point is at Momory Forest Reserve, which is located along Yei-Kaya Road, about two 3.2 km. from Yei Township.

The purpose of this case study is to introduce the course participants to examples of environmental impacts due to extensive teak forest logging, poor management, and the rehabilitation of the teak forests. Participants will also learn how these types of impacts could be minimized or prevented. The environmental review will include both physical environmental impacts (e.g. soil erosion, soil compaction, land degradation, etc.) and socio-economic impacts (e.g. generation of income, creation of employment opportunities, etc.). The environmental review exercise will be carried out using the Leopold Matrix Method, which will be introduced to the course participants before the case study field visits.

I.1 CASE STUDY SITE BACKGROUND NOTES

Note: These case studies have been generated based on information that is sometimes conflicting or incomplete. If any participant has information that adds, corrects or presents another picture of the case study situation, please inform the course facilitators and the case study working group as soon as possible.

Caution: During the discussions with stakeholders, please avoid raising any expectations (or fears) that the activities described in the case study will be implemented or otherwise.

I.2 FOREST MANAGEMENT ISSUES OF EXTENSIVE TEAK FOREST LOGGING AND ASSOCIATED ACTIVITIES

The teak forest management problems due to extensive logging need to be addressed to improve the utilization and management practices for ensuring sustainable timber production. The problems were observed after the case study site field visit and discussions with stakeholders, and are as follows:

- Timber harvesting rotation in teak forests is recommended to be 45 - 60 years (high value timber), but the current stands, which are being harvested, are only 35 years old (low value timber).
- The trees have been cut too high, causing lowering of timber production, due to failure to utilize the trees fully, and also preventing the stumps from coppicing (producing shoots that will grow into new trees). The stumps require cutting down to the ground level for stimulation of re-growth, which is managed in such a way that it develops into a new tree, through progressive thinning.
- Severe frequent fires are known to occur in the area, due to heavy accumulation of litter on the ground and lack of maintenance of fire breaks. These fires kill the regeneration of trees from stumps, but they do not interfere with the timber quality.

- Failure to thin young tree stands is common among most of the forest stands established in 1974, 1976, 1977, and 1979. This reduces the quality and amount of timber produced, since the trees never grow big enough, and can only produce poles.
- Construction of forest access roads for collection and transportation of logs to the sawmills, causing environmental degradation, due to trampling and pulverization of soil surface through movement of heavy machinery.
- Accumulation of timber waste around the sawmill site, since transport problems make it difficult for local communities to collect the waste for use as wood fuel. The leaving of harvested tree branches in the forest to rot is a good practice from an ecological and management point of view, since local communities have enough of their own firewood, and teak does not produce high quality charcoal.
- Current forest management plan requires that all teak forest be felled to start a new management program. This will involve de-stumping of all poorly harvested trees and all forest stands that were not thinned as required. These activities are likely to have severe effects on the environment, and should be carried out in a way that is environmentally sound.

The success of teak forest utilization and rehabilitation activities will depend on the cooperation of local authorities and communities, who are responsible for effective management of the forest resource. The following are some of the considerations that could contribute to the sustainability of forest resource use:

- Introducing community-based forest rehabilitation and management approaches that rely on efficient and cost-effective methods, since the local communities are in a better position to ensure that proper methods are put in place, possibly by ensuring neighborhood watch over the forest. Incentives to involve the local communities may be sought to ensure continuous and sustainable support for forestry management.
- Increasingly, individually owned woodlots are being established adjacent to the Teak Plantation forests. These are activities that could easily be taken up as a means of income generation for individuals and community groups. In return, proper management systems will have to be passed to the participating communities.
- Establishing nurseries for teak trees to enable the local communities establish their own woodlots for future wood fuel requirements, especially as more people increasingly return to Yei.
- Creating reliable marketing channels for teak forest products (timber, poles and firewood), so that generated income can be ploughed back for buying more tools for forest management.
- Rehabilitation of rural access roads for ease of transportation of teak forest products to the market.

GENERAL INFORMATION

2.1 Project Location: Kagulu Forest is located at a distance of eight (8) km. to the west of Yei Township, Yei River County, Equatorial Region, Southern Sudan.

2.2 Climate: The area experiences a hot tropical climate with high temperatures during the dry seasons and cooler temperatures during the wet seasons. The rainfall distribution increases southwards, with a distinct uni-modal rainy season distribution pattern from June to September.

The rainfall distribution pattern in the area ranges from humid to hyper-humid, receiving an average of 1421.2 mm of rainfall per year.

2.3 VEGETATION AND BIO-DIVERSITY

Kagulu Forest is located within an equatorial vegetation zone, which comprises a tropical forest that extends from DRC into Southern Sudan. The forest is comprised of a pure stand of teak trees (*Tectona grandis*) with a few widely scattered Mahogany trees (*Khaya grandifoliola*) along the river beds, and an almost totally absent herbaceous vegetation cover (undergrowth). The area surrounding the forest supports a large variety of flora

and fauna that is rich in bio-diversity and the northern side vegetation patterns are characterized by savanna woodlands and grassland, with lowland forest patches.

2.4 TOPOGRAPHY, SOILS AND DRAINAGE

The area has fairly homogenous physical and topographical conditions, soils, and drainage patterns. It lies on a high plateau that is well drained by the Nile and Congo Rivers that form great drainage systems in Southern Sudan.

The underlying geological structure is composed of mountainous hard rocks (building stones) and the topography ranges from flat areas and gentle slopes, high and rugged mountains, flat-topped plateaus, deep gorged and incised river valleys, rolling plains, and marginal lowland areas that are categorized by shallow stony soils. The dominant soil types include sandy loam soils (most dominant), gravel soils and sandy soils (not much distributed).

Kagulu Stream cuts through the forest and later joins Yei River, which is a tributary of the Nile, which cuts through Southern Sudan, forming a major life-sustaining feature. Most of the rivers on the eastern side are seasonal. There are a number of widely distributed wetland areas that are overgrown with papyrus, which is the dominant vegetation.

2.5 POPULATION

The local population is sparsely distributed, but is likely to rise after the return of refugees. The total estimated population in Sudan is approximately 30 million that is mainly concentrated in Southern Sudan, though the available data may not be quite reliable. Rapid population growth, which is currently about 3% per annum in the region is among the highest in the world, and doubling time is estimated to be 24 years, outpacing the current levels of food production.

Nearly half of the population is under 14 years of age and, many of the region's people are concentrated in fertile highlands or river basins and lake regions of the south. As a result, population densities in some areas are high and land shortage is becoming increasingly common.

2.6 LAND-USE

The major land-use type in the area is forestry production, which is surrounded by agriculture and nomadic grazing. The current civil strife, poor teak timber harvesting methods, periodic natural disasters, and low-technology farming techniques seriously affect these land-use systems. A growing population has put pressure on the natural resource base leading in turn to resource use conflicts such as population displacements, which further degrades the land.

In Sudan, more than 40% of total land area is unproductive, and the land use situation is: Agriculture 5%, pasture (grazing) 22% percent, and forest/woodland cover 19% percent. Extreme variations in climate, physical and natural conditions, and manmade social and economic conditions of the region seriously affect the status of environment and natural resources.

3.0 CASE STUDY REPORT PREPARATION

The course participants will carry out a detailed survey of the existing environmental conditions in the project area, noting those parameters that are likely to be impacted by forest resource management activities (extensive logging, de-stumping and proposed clear harvesting of the forest). Following the case study site visit the participants will prepare, an environmental review report for forest resource utilization and management activities, and an environmental monitoring and mitigation plan that is appropriate for the type and level of potential adverse environmental impacts. The results obtained will be presented in a Leopold Matrix format to the rest of the group for discussion in the plenary.

SITE VISIT FACILITATORS:

- Jane Kahata (ENCAP Consultant)

- Fiesta Warinwa (Resource Person)

CASE STUDY 2: RURAL ROAD REHABILITATION PROJECT (YEI - KAYA ROAD)

1.0 INTRODUCTION

The case study site is located along the Yei-Kaya Road. The site was selected among four (4) road segments that are proposed for rehabilitation by Yei County Council. The segments include: (1) Yei-Kaya Road, 77.3 km; (2) Yei-DRC Border Road, 40.2 km; (3) Yei-Juba Road, 38.6 km; and, (4) Yei-Maridi Road, 5-8 km.

A large part of the Yei-Kaya Road has already been rehabilitated and is in a good shape, but the bridges have not yet been built, and the pits are still open. The borrow pits and road surface cutoff-drains could still be seen at certain intervals along the road. The remaining part of the road is in a bad condition, due to a long period of neglect during the war and intensive use by heavy trucks with uncontrolled axle weights. Some parts of the road had presence of deep pot-holes, gullies and poorly designed and blocked cut-off drains that make the road impassable, especially during the rainy seasons, causing the occurrence of double tracks by vehicles while avoiding the damaged and flooded parts of the road. Also, presence of old borrow pits, that were never filled up when the road was rehabilitated last time, could be seen on the side of some parts of the road.

The purpose of this case study is to show the course participant examples of environmental impacts caused by road construction and rehabilitation activities, and also to show how they could be minimized or prevented. The environmental review exercise will include both physical impacts (e.g. loss of bio-diversity, soil erosion occurrence, land degradation, etc.) and socio-economic impacts (e.g. creation of employment opportunities, transportation of goods, access to health centres and schools, etc.).

1.2 Case Study Site Background Notes

Note: These case studies have been generated based on information that is sometimes conflicting or incomplete. If any participant has information that adds, corrects or presents another picture of the situation, please inform the course facilitators and the case study working group as soon as possible.

Caution: During the discussions with stakeholders, please avoid raising any expectations (or fears) that the activities described in the case study will be implemented or otherwise.

1.3 Purpose of Rural Road Rehabilitation Project and Associated Activities. The rural road rehabilitation project is meant to alleviate problems affecting the transportation of goods in Southern Sudan. This entails the following activities and possible environmental impacts:

- Smoothing of the road surface, filling up of potholes and gullies that have developed during the long period of road neglect due to the war, and creation of a concave road surface for ease of drainage during the rainy seasons;
- Creation of borrow pits to serve as sources of road surface filling soil material that causes removal of soil vegetation cover, soil erosion occurrence, breeding opportunities for disease vectors (e.g. mosquitoes, etc.), and possible source of drinking water for livestock.
- Creation of cut-off drains for removal of road surface runoff that causes removal of soil surface vegetation cover and surface runoff concentrations on the roadside that could cause severe soil erosion in surrounding areas.
- Opening up of remote areas that could cause increased exploitation of forests resources and charcoal burning, and opening up of new areas for agricultural land expansion.

- Improved access to markets for sale of farm and livestock produce, purchase of farm products (e.g. seeds, agricultural chemicals, etc.) and other foodstuffs not grown in the farm.
- Increased movement and interaction of local communities with foreigners and people from other areas that could cause increase in HIV/AIDS infection among the local communities.
- Improved access to schools and high quality health services for the local communities.

The sustainability of road rehabilitation activities will mainly depend on the following considerations:

- Training of local road rehabilitation and maintenance technicians, and local communities on “good practices” for the maintenance of rural access roads.
- Providing the local communities with the necessary tools for proper road rehabilitation and maintenance.
- Establishment of a road monitoring and maintenance program for ensuring timely rehabilitation and maintenance of roads (especially after the rains), and training of local communities on how to run the monitoring program.

2.0 GENERAL INFORMATION

2.1 Project Location. The project area is located along the Yei – Kaya Road, Yei River County, Equatorial Province, and Southern Sudan.

2.2 Climate. The project area experiences a hot tropical climate with high temperatures during the dry seasons and cooler temperatures during the wet seasons. The rainfall distribution increases southwards, with a distinct uni-modal rainy season distribution from June to September.

The rainfall distribution in the area ranges from humid to hyper-humid, receiving an average of 1,421.2 mm of rainfall per year.

2.3 Vegetation and Bio-Diversity. The area is within an equatorial vegetation zone, which comprises a tropical forest that extends from DRC into Southern Sudan. Savanna woodlands and grassland, with lowland forest patches characterize the northern side vegetation patterns. These forests are under threat due to continuing expansion of agricultural land.

The area supports a large variety of flora and fauna that is rich in bio-diversity, and endemic plants and animals. The vegetation type along the road is composed of woody tree species that include *Anona Senegalenses*, *Tectona grandis* (Teak tree) *Vitarellaia Nilotica* (Lulu tree), *Mangifera Indica* (Mango tree), *Borassus Ethiopium* (Doum Palm), *Combretum Sp.*, *Grewia Mollis*, *Bambusa Sp.* (Bamboo Grass), *Neem Sp.* etc. The herbaceous ground cover vegetation is composed of grasses, legumes and forbs that mainly include *Hyperreniah Sp.*, *Panicum Maximum*, *Cynodon dactylon*, *Pennisetum Sp.*, etc. The common wildlife species include bush buck, diki diki, wild pigs, foxes, jackals, hyenas, etc., but most of the big game has disappeared due to the war.

2.4 Topography, Soils and Drainage. The area is of extreme diversity in physical and topographical conditions, soils, and drainage patterns. It lies on a high plateau that is well drained by the Nile and Congo Rivers that form great drainage systems in the area. River Nile cuts through Southern Sudan, forming a major life-sustaining feature. There are a number of widely distributed wetland areas that are overgrown with papyrus as dominant vegetation.

The geological structure is composed of mountainous hard rocks (building stones) and the topography ranges from flat areas and gentle slopes, high and rugged mountains, flat-topped plateaus, deep gorged incised river valleys, rolling plains, and marginal lowland areas that area categorized by shallow and stony soils. The dominant soil types include loamy soils (most dominant), gravel soils and sandy soils (not much distributed).

2.5 Population. The local population is sparsely distributed, but is likely to rise after the return of refugees. The total estimated population in Sudan is approximately 30 million people, mainly concentrated in Southern

Sudan, though the available data may not be quite reliable. Rapid population growth, which is currently about 3% per annum in the region, is among the highest in the world, and doubling time is estimated to be 24 years, outpacing the current levels of food production.

Nearly half of the population is under 14 years of age and, many of the region's people are concentrated in fertile highlands or river basins and lake regions of the south. As a result, population densities in some areas are high and land shortage is becoming increasingly common.

2.6 Land-Use. The road passes through an area that is under agriculture, nomadic grazing land and teak forests. Current civil strife, periodic natural disasters, and low-technology farming techniques have seriously affected these land-use systems. An increase in population has put pressure on resources leading to their degradation and resource use conflict-driven population displacements that further cause severe degradation of the natural resource base.

In Sudan, more than 40% of total land area is unproductive. Land use is as follows: Agriculture 5%, pasture (grazing) 22% percent, and forest/woodland cover 19% percent. Extreme variations in climate, physical and natural conditions, and manmade social and economic conditions of the region seriously affect the status of the environment and natural resources base.

3.0 CASE STUDY REPORT PREPARATION

The course participants will carry out a detailed survey of the existing environmental conditions in the project area, noting those environmental parameters that are likely to be impacted by road rehabilitation and maintenance activities (e.g. creation of barrow pits, surface runoff, flow concentrations caused by cut-off drains, etc). Following the case study site visit, the participants will prepare an environmental review report for road rehabilitation and maintenance activities, and an environmental monitoring and mitigation plan that is appropriate for the type and level of the potential adverse impacts environmental impacts identified. The results obtained will be presented in a Leopold Matrix format to the rest of the group.

FACILITATOR:

- E. Wahome , Regional Environmental Advisor, USAID/REDSO/ESA, Nairobi.

CASE STUDY 3: URBAN WATER AND SANITATION REHABILITATION PROJECT

1.0 INTRODUCTION

The Urban Water and Sanitation Rehabilitation Project targets the residential parts of Yei Township, which are mainly comprised of semi-permanent building structures. The present water and sanitation facilities are boreholes, which are the sources of water for domestic use and latrines for disposal of human waste. In most places, the boreholes and latrines are located very close to each other, showing that possible contamination of borehole water by liquid human waste through underground seepage may occur. A number of water pumps for drawing water from the boreholes in the sites that were visited were not functioning, due to lack of spare parts and proper maintenance. The present facilities were constructed 20 years ago and they have never been rehabilitated. Originally, the communities were using bucket latrines, where the human waste was disposed of elsewhere. This situation has changed as a result of the increase of residential population in the township, resulting in the replacement of bucket latrines with pit latrines.

This case study has five (5) sites that are located in Yei Township. The sites include (1) Lomuku II; (2) Dar-Es-Salaam; (3) High Eleven; (4) High Simba; and, (5) Gambat Area. The sites have wells and latrines located side by side, with some latrines being located up-slope in most of the sites. At the Lomuku II site, the water source is a spring, and the water drawing site (where the facilities have broken down) is located down-slope from the residential area (which is located on the spring catchments area). The possibility of the contamination of ground water through underground seepage of liquid human waste from the pit latrines is now an issue. Some of the boreholes are also not protected from rainwater surface run-off contamination.

The purpose of this case study is to show the course participants examples of environmental impacts caused by rehabilitation and maintenance of urban water and sanitation facilities. The environmental review will include both physical impacts (e.g. soil erosion, loss of bio-diversity, etc.), and socio-economic impacts (e.g. creation of employment opportunities, reduction of water-borne diseases, etc.).

1.2 Case Study Site Background Notes.

Note: These case studies have been generated based on information that is sometimes conflicting or incomplete. If any participant has information that adds, corrects, or presents another picture of the case study situation, please inform the course facilitators and the case study working group as soon as possible.

Caution: During the discussions with stakeholders, please avoid raising any expectations (or fears) that the activities described in the case study will be implemented or otherwise.

1.3 Purpose of Urban Water and Sanitation Project and Associated Activities. The water and sanitation project is meant to rehabilitate the existing water and sanitation facilities in the residential parts of Yei Township, so as to meet the increasing demand for the supply of clean water for domestic use. The project will also improve on the operation and maintenance of water and sanitation facilities. Project development activities include the following:

- Rehabilitation of the existing water and sanitation facilities in the residential parts of the township;
- Development of large-scale urban water supply to meet the increasing demand for water in the township as a whole;
- Provide technical training for proper maintenance and operation of water and sanitation facilities;
- Provide residential community training on proper maintenance and operation of water and sanitation facilities;
- Relocation of boreholes to the up-slope of the latrines to prevent the potential contamination of borehole water through seepage of liquid human waste;
- Relocation of present residential areas to a new site; and
- Sensitization of the communities on cost-sharing for the generation of revenue for maintenance of water and sanitation facilities.

The sustainability of the water and sanitation project will mainly depend on the following considerations:

- Providing technical training to the local technicians on proper maintenance and operation of water and sanitation facilities;
- Providing training to the residential community training on proper maintenance and operation of water and sanitation facilities;
- Providing the necessary spare parts that are required for proper and timely repairs and maintenance of water and sanitation facilities;
- Sensitization of the residential communities on cost-sharing for the generation of revenue for maintenance of water and sanitation facilities.

2.0 GENERAL INFORMATION

2.1 Project Location: The project area is located in the residential parts of Yei Township, Yei River County, Equatorial Province, and Southern Sudan.

2.2 Climate: The county area experiences a hot tropical climate with high temperatures during the dry seasons and cooler temperatures during the wet seasons. The rainfall distribution increases southwards, with a distinct uni-model rainy season distribution from June to September.

The rainfall distribution in the area ranges from humid to hyper-humid, receiving an average of 1421.2 mm of rainfall per year.

2.3 Vegetation and Bio-Diversity. The county is within an equatorial vegetation zone, which comprises a tropical forest that extends from DRC into Southern Sudan. The northern side vegetation patterns are characterized by savanna woodlands and grassland, with lowland forest patches. These forests are under threat due to continuing expansion of agricultural land.

The forest vegetation is composed of Teak Sp., Mahogany Sp. along the river banks (riverine forest), *Combretum Sp.*, *Grewia Mollis*, *Bambusa Sp.* (*Bamboo Grass*), *Neem Sp.* etc. The ground cover vegetation is a grassland with scattered trees composed of grasses, legumes and fobs that mainly include *Hyperreniah Sp.*, *Panicum Maximum*,

The area supports a large variety of flora and fauna that is rich in bio-diversity, and endemic plants and animals.

2.4 Topography, Soils and Drainage. The county area is of extreme diversity in physical and topographical conditions, soils, and drainage patterns. It lies on a high plateau that is well drained by the Nile and Congo Rivers that form great drainage systems in the area. The River Nile cuts through Southern Sudan, forming a major life sustaining feature, and on the eastern side the rivers are seasonal. There are a number of widely distributed wetland areas that are overgrown with papyrus as dominant vegetation.

The geological structure is composed of mountainous hard rocks (building stones) and the topography ranges from flat areas and gentle slopes, high and rugged mountains, flat-topped plateaus, deep gorged, incised river valleys, rolling plains, and marginal lowland areas that area categorized by shallow and stony soils. The dominant soil types include loamy soils (most dominant), gravel soils and sandy soils (not much distributed).

2.5 Population. The local population is sparsely distributed, but is likely to rise after the return of refugees. The total estimated population in Sudan is approximately 30 million, which is mainly concentrated in Southern Sudan, though the available data may not be quite reliable. Rapid population growth, which is currently about 3% per annum in the region, is among the highest in the world, and doubling time is estimated to be 24 years, outpacing the current levels of food production.

Nearly half of the population is under 14 years of age and, many of the region's people are concentrated in fertile highlands or river basins and lake regions of the south . As a result, population densities in some areas are high and land shortage is becoming increasingly common.

2.6 Land-Use. The case study is located in an urban area that is surrounded by agriculture and nomadic grazing land. These land-use systems are seriously affected by current civil strife, (poor teak timber harvesting methods), periodic natural disasters, and low-technology farming techniques. The increase in population pressures on resource exploitation and conflict-driven population displacements have caused severe degradation of the natural resource base.

In Sudan, more than 40% of total land area is unproductive, and the land-use situation is: Agriculture 5%, (grazing) 22% percent, and forest/woodland cover 19% percent. Extreme variations in climate, physical and natural conditions, and manmade social and economic conditions of the region seriously affect the status of environment and natural resources base.

3.0 CASE STUDY REPORT PREPARATION

The course participants will carry out a detailed survey of the existing environmental conditions in the project area, noting those parameters that are likely to be impacted by rehabilitation and maintenance of water and sanitation facilities. Following the case study site visit, the participants will prepare an environmental review report for water and sanitation rehabilitation activities, and an environmental monitoring and mitigation plan that is appropriate for the type and level of potential adverse environmental impacts. The results obtained will be presented in a Leopold Matrix format to the rest of the group for discussion in the plenary.

FACILITATORS:

- David Kinyua: Assistant Regional Environmental Advisor, USAID/REDSO/ESA, Nairobi.

ANNEX 3: COMMENTS ON THE LOGISTICS FOR THE SUDAN TRAINING WORKSHOP, HELD IN YEI FROM THE 18TH-22ND OCTOBER 2004

From: Kinyua, David (REDSO/ESA/FS)

Sent: Wednesday, January 05, 2005 4:34 PM

To: NAIROBI AID-EXO EXPRESS TRAVEL

Cc: Knausenberger, Walter (REDSO/ESA/FS); Walsh, James (NAIROBI/SFO); Wahome, Ephantus (REDSO/ESA/FS); Yugulle, West (NAIROBI/SFO)

Patrick,

Express Travel, Sudan Logistics Support Office:

Sudan Women's Workshop: Observations on the Logistics Organization

Bringing on board a professional organization to assist in logistics of organizing a course or a workshop in Southern Sudan is a great idea. One of the most challenging and daunting tasks in organizing a course in a country where you don't have counterpart organizations is the logistical part of it. The first All-Men environmental workshop held between February/March 2004 benefited immensely from CARE-Sudan's assistance in helping organize the logistical part of the workshop. Being Express travel's first time to do this sort of thing for Sudan, I expect that some sort of feed back can only help them improve in their future performance. I have limited my observations to the items below.

- 1) **Materials development and packing:** It is largely the role of the facilitators to design and put together the necessary participants' source books and other materials. However due to the usual bulkiness of the source books and guideline,s it has always been necessary to hire a vendor to reproduce, fit the materials in binders and pack them in transportable manner. This phase of preparation is normally very hectic as a lot of last minute additions need to be rushed to the vendor to be included with the other materials. It is important for Express travel to be engaged probably a month before the course is due to identify the vendor, organize payments and supervise the quality of the work done. For the Sudan workshop- Ephantus, our office staff, and myself ended up doing and redoing (repacking properly) this bit of the logistics.
- 2) **Shipping of the materials:** It is also important for ET to organize the shipping to the airport and through the airport of the training materials boxes (usually between 10 to 15 large boxes). We have had to revert to USAID/ EXO to get assistance to transport the materials to the airport, and more importantly to offer us a shipping expediting official. This is important to avoid the customs asking for each box to be opened at the airport.
- 3) **Route of travel of the training materials and personnel:** Perhaps more important is the choice of the route chosen to take the materials to the Southern Sudan. Lokichogio route is not an easy route, but it is infinitely better than the Entebbe route that we used during the last training. There was definitely no plan or arrangement in place to take the training materials to Yei! At some point we were faced with the option of paying KQ ourselves to carry the whole luggage (250 kgs) back to Nairobi. It is important to note that there are no large aircrafts flying to Yei from Entebbe that could carry this kind of luggage. Eventually we had to pay for the luggage to be flown to Arua the following day, while we proceeded to Yei to look for a vehicle to drive to Arua to carry the materials back to the training venue. This is definitely a no-go route.
- 4) ET should perhaps be more engaged in transporting the participants from various points in Southern Sudan and Kenya, much earlier than they did. This should include knowing who has been nominated, their pickup points, and any change of plans. Some participants did not get to the training venue at all, while others ended up getting stuck en route and did not get to Yei until two days into the training.

- 5) Transporting the participants back home should be much easier than getting them to the venue. Unfortunately we had conflicting information on how this was supposed to be achieved. A large number of participants were flying back to Nairobi and we were informed that a flight had been chartered for this purpose to transport about 18 people back to Kenya by 11.00 am. It turned out that there was no chartered flight, although trackMack on their regular flights were to pick several passengers from Yei. Most of the participants did not have their names on the flight manifest, while those who were on the manifest had either not turned up or had left a day earlier. It was only when Ephantus and I produced USAID identification and committed to taking responsibility for the others that the Captain agreed to take those whose names were missing on board.
- 6) Finally, having a workshop in Southern Sudan involves traveling between two or three countries. By some fate, the flight taking the participants from Wilson to Yei did not stop at Lokichogio and those on board did not have a valid exit stamp on their papers. This matter preoccupied some of the participants endlessly. If this was a charter flight, it is important for the ET to take up the matter the flight operators so that this does not happen again.

The course/workshop went very well as shown by the high evaluation scores but most of the participants scored the logistical arrangements very low between 1 and 2, on a scale of 1 to 5. I hope the above points/comments and observations will help you address these issues better during the forthcoming courses in Southern Sudan.

Kind regards,

David Kinyua

ANNEX 4: COURSE AGENDA

USAID/SUDAN ENVIRONMENTAL CAPACITY BUILDING COURSE

Venue: Christian Women Center, Yei, Southern Sudan

October 18th to 23rd 2004

Time	Event or Module	Materials
3:00-6:00	Arrival. Registration and Logistical Arrangements	All Participants
DAY 1: Introduction to Environmentally Sound Design		
08:00-09:30	Opening Statements	E. Wahome/West Yugulle
09:30-10:00	1. Presentation of Course Agenda, Participant Introductions, and Solicitation of Group Goals	By J. Kahata; D. Kinyua
10:00-10:30	<i>Coffee Break</i>	
10:30-12:30	2a. What is the environment? (30 min) 2b. Why Assess Environmental Impacts? (30 min) 2c. Constructing a Historical Timeline for Southern Sudan (1 Hr)	J. Kahata Motivating EIA overheads (PPT 240K) by D. Kinyua Briefing materials by J. Kahata
12:30-1:00	3. Principles and practice of Environmentally Sound Design in key sectors (with opportunity for discussion of participants experiences)	New draft Environmental Guidelines for small scale activities (see resources pages) By D. Kinyua
13:00- 14:00	<i>Lunch break</i>	
14:00 -15:00	3. An introduction to Environmentally Sound Design (ESD)	ESD overheads (PPT 308K "Env. Sound Design" (From new Draft Small Scale Guidelines) (PDF, 349K) By E. Wahome
15:00 -16:00	Transect Walk through the CWEC	Briefing materials Facilitated By: J. Kahata; E. Wahome; D. Kinyua
16:00-16:15	<i>Coffee Break</i>	
16:15 – 15:15	4. Basic Concepts for Assessing Environmental Impacts	EIA basic concepts overheads (201 K) By J. Kahata EIA Topic Briefing (Section 1) (PDF, 513K)
18:00- 18:30	Facilitators meeting	All Facilitators
DAY 2: USAID environmental Procedures and Methods; IEEs and Environmental Reviews		
07:00-08:00	<i>Breakfast</i>	
08:00-08:30	Review of Day 1	F. Warinwa
08:30-10:00	5. USAID Environmental Procedures Workgroup exercise: Classifying activities using USAID environmental procedures: Classifying projects using Reg 216	USAID procedures (PPT 100K) EGSSAA: Chapter 6 Screening activities- By E. Wahome & D. Kinyua
10:00-10:15	<i>Coffee Break</i>	
10:15- 10: 30	6. Information Requirements and Tools for Screening and Preliminary Assessment	EIA Info & Tools overheads (PPT 149K) By D. Kinyua EIA Topic Briefing (Section 3) (PDF, 513K)
10:30- 11:15	7. Required Documentation Process Classifying subgrant activities using the environmental screening form	Required Documentation (PPT 77KB) Writing the IEE By E. Wahome and D. Kinyua
11: 15 – 12.00	Examination of Sample IEE	By D. Kinyua

Time	Event or Module	Materials
12:00 - 13:00	Biophysical environment; environmental policy; information sources in Southern Sudan Sources of information and methods for conducting EIA in the local context.	By Fiesta Warinwa
13:00-14:00	Lunch	
14:00-16:00	9b. The national context: Social and cultural conditions, context and policy in Southern Sudan 9b. Sources of information and methods for conducting social assessment in Southern Sudan	By Fiesta Warinwa
16:00-16:15	Coffee Break	
16:15-17:00	10. Introduction to Environmental Mitigation and Monitoring	Mit & Mon overheads (PPT 126K) EIA Topic Briefing (Section 4) (PDF, 513K) By J. Kahata
17:00-17:30	11. Field trip briefings (case study project sectors in the local context: (Working groups)	Country specific case site briefs prepared by course organizer (samples available in the participants manual) By E. Wahome & D. Kinyua
18:00- 18:30	Facilitators meeting	All Facilitators
18:45-	Dinner	
Day 3: Case study field trip		
07:00-08:00	Breakfast	
departure 07:30-08:30	11. Field trip to case study sites. (Working groups of 5-8 participants travel to separate sites; conduct initial assessments in the field.	All Facilitators
18:00-18:30	Facilitators' Meeting	All Facilitators
DAY 4: Producing Environmental Reviews and Monitoring and Evaluation Plans based on the field trips		
07:00-08:00	Breakfast	
08:00-08:30	11. Brief reactions to Field Trip	J. Kahata
08:30-11:30	11. Working Group: Drafting Environmental Reviews for Case Studies (includes break)	J. Kahata, E. Wahome and D. Kinyua & F. Warinwa
11:30-12:30	11. Presentation and discussion of Draft Environmental Assessment or Environmental Review Outlines	J. Kahata
12:45-14:00	Lunch	
14:00-16:00	11. cont'd (Presentation and discussion of Draft Environmental Assessment	J. Kahata
16:00-16:15	Coffee Break	
16:15-17:00	11. Environmental Mitigation and Monitoring: More on Issues and Methods	Mit & Mon overheads (PPT 126K) J. Kahata EIA Topic Briefing (Section 4) (PDF, 513K)
17:00-18:00	13. Working Group: Developing Plans for Monitoring and Mitigation for Case Studies	J. Kahata, E. Wahome; D. Kinyua & F. Warinwa
18:00-18:30	Facilitators' Meeting	All Facilitators

Time	Event or Module	Materials
DAY 5: Mitigation and Monitoring Plans, EIA Tools, and Synthesis		
07:00-08:00	<i>Breakfast</i>	
08:30-09:45	13. Presentation and Discussion of Draft Mitigation and Monitoring Plans	E. Wahome
09:45-10:30	14a. Beyond the IEE 14b. Environmental Assessments and Programmatic Environmental Assessments	USAID Environmental procedures applied to subgrants or Umbrella projects Beyond IEE (ppt 71KB by E. Wahome EIA Topic Briefing (Section 2) (PDF, 513K)
10:00-10:15	<i>Coffee Break</i>	
10:15-11:00	16. Special topics: • Environmental Assessment of Pesticide Use in USAID Activities • Proposed by participants	USAID Pesticides overheads (PPT, 224K) By D. Kinyua
12:45-14:00	<i>Lunch</i>	
14:00-14:30	17. Course Evaluation, Synthesis, and Recommendations for Follow-up Activities	J. Kahata; E Wahome
14:30-15:30	18. Closing ceremony and presentation of certificates	Mr. Lokonga (County Secretary)
15:00-	Facilitators available for Individual Consultations	J. Kahata; E. Wahome and D. Kinyua
DAY 6: Departure		
07:00-08:30	<i>Breakfast</i>	
10:00	Departure	

ANNEX 5: LIST OF PARTICIPANTS

ENCAP SUDAN YEI TRAINING – OCT 18TH – 22ND 2004

List of Participants – by Department / Organizations

#	Names of Participants	Location or Pickup sites	Organization or Department	Contact Details
1.	Margaret Mathiang	Nairobi	NESINET	Contact: Nesinet@todays.co.ke Cell phone No. 0721 602 589
2.	Ann Issa Bindiku	Nairobi	NESINET	Contact: nesinet@nesinet.org Cell phone no. 0721 931 342
3.	Jane J. Surur	Nairobi	Secretariat of Coops/Rural Dev.	Contact: stevealik@yahoo.com Cell phone 0733 947 087
4.	Mary Nyakuon Bol	Nairobi	Secretariat of Education	Contact: nyakuonbol@yahoo.com Cell phone 0720 951 588
5.	Moni Sicilia Eluzai	Lui (Mundri)	MRDA (water and sanitation project), Lui Base	Contact: mrda@alphanet.co.ke,
6.	Loice Awadia Edaward	Lui (Mundri)	MRDA (water and sanitation project), Lui Base	Contact: mrda@alphanet.co.ke,
7.	Grace Tartisio	Kampala	SAAR	c/o Secretariat of Agric and Animal Resources.
8.	Vosca Najat Martin	Yei	NPA	Contact: 271 8005 or 271 8175
9.	Suzan Taban	Yei	NPA	Contact: 271 8005 or 271 7934
10.	My linda Night Justin	Yei	NPA	Contact: 271 8005 or 271 7934
11.	Edina Tumalu Charles	Yei	SAAR	c/o Secretariat of Agric and Animal Resources.
12.	Joice Jamba Edmond	Yei	County Agric Department - Yei	c/o Secretariat of Agric and Animal Resources.
13.	Betty Paya	Yei	NPA	Contact: 271 8005 or 271 8175
14.	Gladys Mananyu	Loki	NSCC (peace officer)	Gladys Tel: 0722 399 293 peacedesk@swiftkenya.com
15.	Elizabeth Majok	Nairobi	NSCC (peace officer)	Contact: 0721 481 384 peacedesk@swiftkenya.com
16.	Grace Samuel Oryama	Maridi	NSCC (peace officer)	nmmyg@yahoo.com
17.	Helen Maya	Maridi	Secretariat of Education	Contact: mrda@alphanet.co.ke, or Contact: SoE, c/o Kosti Manibe
18.	Charity 'Buga	Nairobi	United States Department of agriculture (USDA)	Contact: 0733 586137 email: cbuga@iap-mu.org
19.	Joyce Janda	Nairobi	Sudan Basic Education Program (SBEP)	Contact: Mwendwa@care.or.ke Tel: (254) 272 5571
20.	Oba Cecilia	Yei	Secretariat of Women and Child welfare	c/o SRRC Regional Office - Yei
21.	Roselyne Atieno Ochara	Nairobi	Latjor Relief and Development Organization	Contact: oracha75@yahoo.com or 0720 916 784
22.	Nyaluak Domach	Nairobi	Latjor Relief and Development Organization	Roselyne Atieno: 0720 916 784 or Simon Doup: 0721 846 926
23.	Dr. Elizabeth Ojaba	Rumbek	John Snow International (Sudan Program)	Contact JSI: 272 4093/6 or eojaba@jisudan.com

ANNEX 6: EVALUATION OF THE FIRST ALL WOMEN'S TRAINING COURSE

Southern Sudan All-Women Environmental Capacity Building Training Course (Oct 2004)

Evaluation Summary		Average Score (lowest is 1 and highest is 5)
1	How would you assess the overall quality of the course content?	4.4
2	The extent to which the course improved the understanding of EA&M	4.1
3	The extent to which you now feel prepared to undertake or assist in the preparation of an IEEE	N/A
4	Would you have spoken as freely?	95.2 Yes only one said she was not so sure
5	Course scheduling and organization	3.9
6	Course logistics and venue	4.3
7	Content of Participant's source book	4.4
8	Content of Environmental Guidelines for Small scale activities	4.3
9	Facilitation	4.5
Average Score		4.3